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Section 1

BASIC UNIT OPERATION

The purpose of following instructions is to aid the OEM customer in writing his retail customer operating manual. It is NOT intended that these instructions be used as is. In many cases illustrations can (and perhaps should) be used in place of written instructions. Also, a different order of presentation may be advantageous. Wording may be changed in any manner desired, provided the various points and PRECAUTIONS are suitably brought out.

CONTROLS AND INDICATORS

The operating controls are conveniently located on the front panel to the right of the cartridge holder or behind the door to the left of the cartridge holder. All the front panel controls are shown and described in Figure 1 and Table 1 of this section.

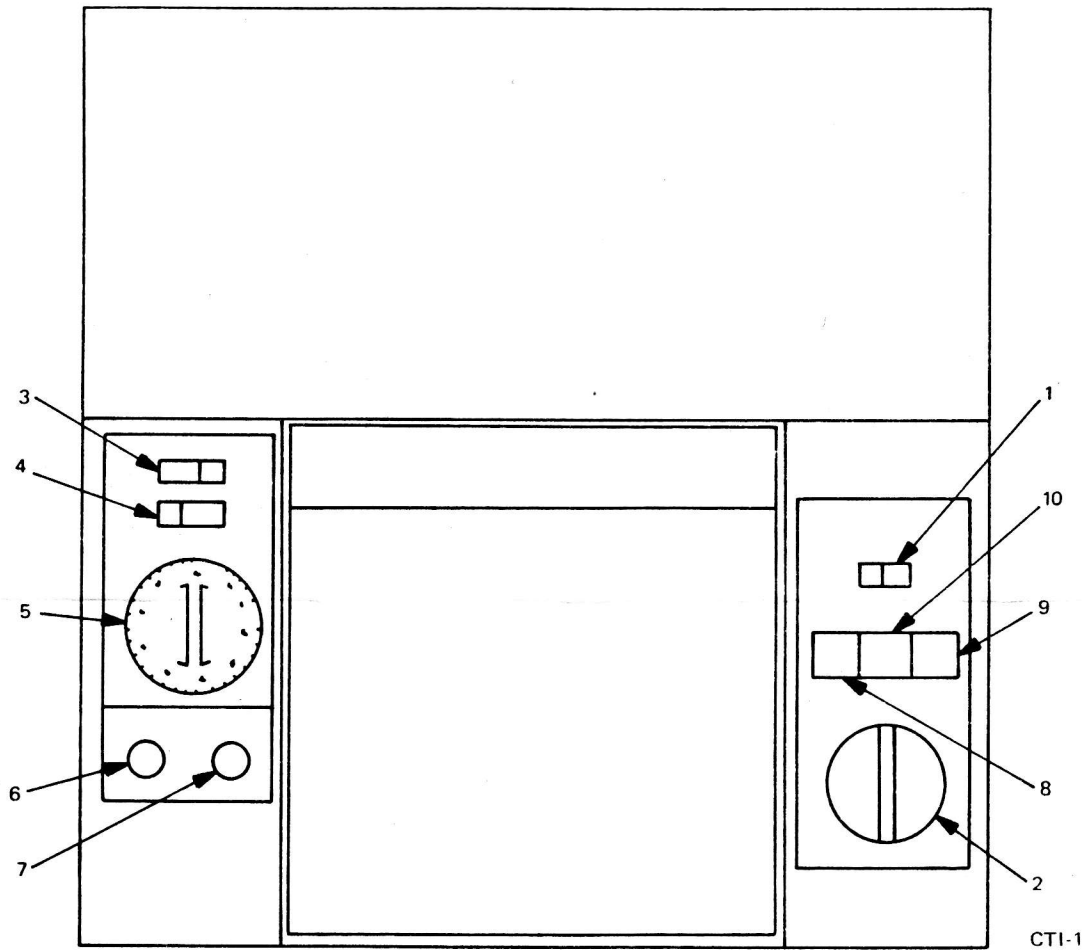


Figure 1.

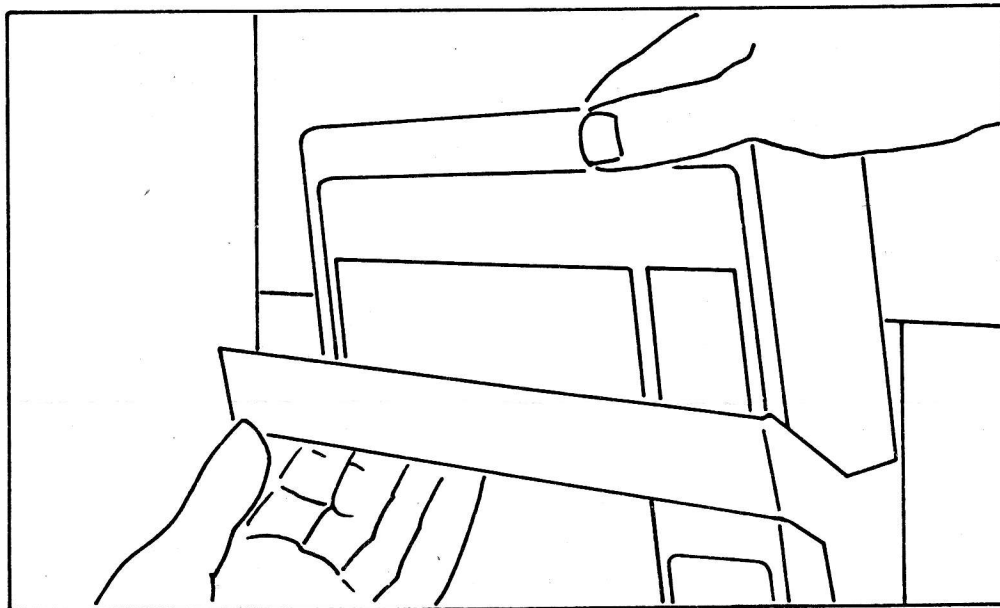
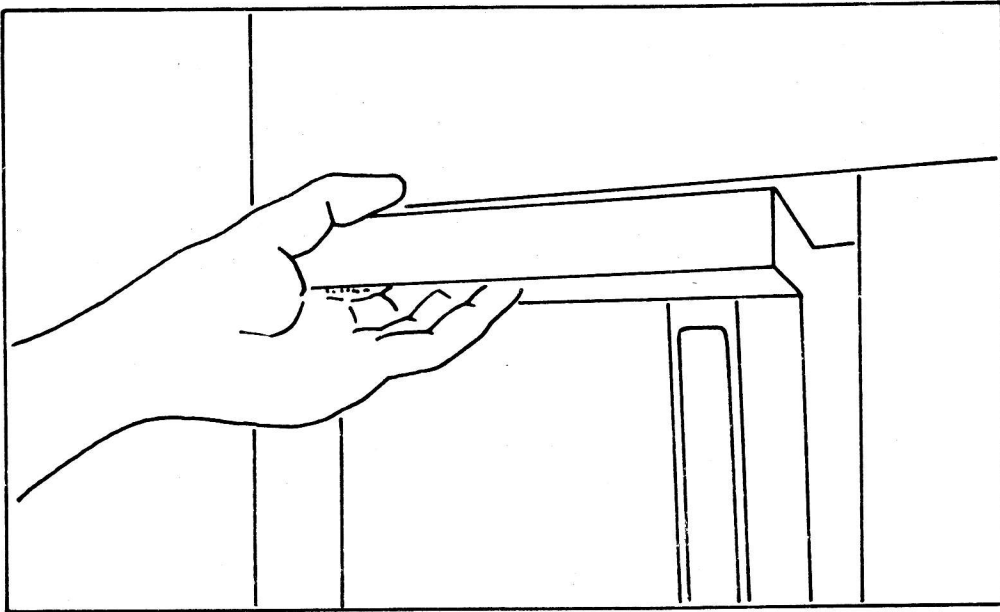
1. CTV/TV Switch:	Selects either normal television operation (TV position) or operation in conjunction with the CARTAVISION® Recorder (CTV position).
2. Function Switch:	Controls tape motion in the play and record modes (PLAY position) and in the fast forward and rewind modes (REWIND position). Turn-switch to desired position (see 8 and 9 below).
3. Camera Switch:	Connects camera to CARTAVISION® Recorder (ON position), connects camera to television set for monitoring (CCTV position) or connects television set to CARTAVISION® Recorder for recording purposes (OFF position).
4. TIMER-SLEEP Switch:	Allows TIMER (5 below) to be used to turn on CARTAVISION® Recorder and television set for unattended recording and automatically turns CARTAVISION® Recorder and television set off after unattended recording or after playback (TIMER-SLEEP position). NORMAL position disables TIMER (5) and returns CARTAVISION® Recorder to STANDBY (2) after recording or playback.
5. TIMER:	Provides up to eight hours delay in turning on CARTAVISION® Recorder and television set for unattended recording.
LOCK 6. TUNE Control:	For playback only, slowly adjust for best picture.
HOLD 7. FINE TUNE Control:	For playback only, adjust for least hook (pulling) at top of picture.
8. F. FWD push button:	Press simultaneously with turning of function switch (2) to REWIND position to place tape in fast forward mode.
9. RECORD push button:	Press simultaneously with turning of function switch (2) to PLAY position to record video and audio on tape.
10. STOP push button:	Press to stop any function in process.

Table 1. Operating Controls

CARTRIDGE LOADING

The **CARTAVISION®** Recorder uses either of two sizes of tape cartridges. The smaller cartridge contains sufficient tape for up to thirty minutes of playing time, while the larger cartridge has a playing time of up to 114 minutes. Cartridges can only be loaded with the function switch (No. 2 in Figure 1) in the STANDBY position. The cartridge holder is locked closed in either of the other two switch positions. To load the tape cartridge, refer to Figure 2 and proceed as follows:

- Step 1:* Pull the cartridge holder open. (The cartridge holder moves horizontally for a short distance, then tilts down at an angle for easy cartridge insertion.)
- Step 2:* Insert the cartridge making sure that the cartridge label is right side up and facing out. (There are special grooves on each side of the cartridge to prevent the cartridge from being installed backwards or upside down. The cartridge **SHOULD NOT BE FORCED**. If the cartridge is not fully inserted into the cartridge holder, there will be a humming sound and no picture.)
- Step 3:* Close the cartridge holder. (The cartridge holder should be flush with the front panel.)



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Figure 2.

APPLYING POWER

To apply power to the CARTAVISION® Recorder, it is only necessary to place the CTV-TV switch in the CTV position if the TV set is already on.

FAST WINDING

The fast forward and rewind functions cause the tape in the cartridge to move rapidly from one reel to the other within the cartridge. The tape in a large full cartridge can be wound from one reel to the other in less than 6 minutes. These functions are also used to rapidly locate a particular portion of the recorded material within the reel of tape.

To rewind the tape, make sure that the tape is stopped, then turn the function switch (No. 2 in Figure 1) to the REWIND position. At the end of tape rewind, the CARTAVISION® Recorder will automatically stop and return to STANDBY at the end of the tape.

Either function, fast forward or rewind, may be stopped manually at any time.

STOPPING TAPE MOTION

To stop tape motion, either from standard operating speed or from one of the fast winding speeds, press the STOP button (No. 10 in Figure 1). This stops motion and returns all functions to STANDBY.

RECORDING

General

There are two basic types of program material: live and off-the-air. The live program has the camera and microphone connected to the CARTAVISION® Recorder, whereas the off-the-air program is recorded directly from the television set. The two procedures given below, while separate, are very similar.

In addition, off-the-air programs can be recorded unattended. A timer is used to automatically turn on both the CARTAVISION® Recorder and the television set.

Off-The-Air Recording Procedure

To record a program from the television set, proceed as follows:

- Step 1: Load a blank tape cartridge of sufficient duration into the CARTAVISION® Recorder.
- Step 2: Apply power to the television set and place the CTV/TV switch (No. 1 in Figure 1) in the CTV position. Check to be sure that the TIMER/SLEEP switch (No. 4 in Figure 1) is in the NORMAL position.
- Step 3: At the desired time, simultaneously press the RECORD button (No. 9 in Figure 1) and turn the function switch (No. 2 in Figure 1) to the PLAY position. At the end of the recording, press the STOP button (No. 10 in Figure 1) and, if desired, rewind the tape and remove the cartridge.

NOTE

The CARTAVISION® Recorder will automatically stop and return to STANDBY at the end of the tape.

Live Recording Procedure

The procedure for making a live recording is the same as that for recording an off-the-air program, except that—after step 1—the cables from the INSTANT REPLAY video camera and the microphone are connected to the appropriate receptacles at the rear of the CARTAVISION® Recorder (Figure 3) and the camera switch (No. 3 in Figure 1) is placed in the ON position. After the cables have been connected and the camera has been turned on, proceed with step 2 of the “Off-The-Air Recording Procedure”.

NOTE

In addition to the STOP button on the CARTAVISION® Recorder, recording may be terminated by depressing the indicator switch on the INSTANT REPLAY camera. Note that a red light in the camera indicator switch is ON whenever the CARTAVISION® Recorder is in the record mode.

Unattended Off-The-Air Recording Procedure

The procedure for making an unattended off-the-air recording is the same as that for recording a normal off-the-air program, except that after step 2—the TIMER/SLEEP Switch (No. 4 in Figure 1) is placed in the TIMER/SLEEP position and the TIMER control (No. 5 in Figure 1) is set for the difference between the time that the program is to start and the present time. For example, if the program to be recorded starts at 6:00 p.m. and the present time is 4:00 p.m., rotate the TIMER knob clockwise until the 2 (6:00 minus 4:00 = 2 hours) is under the TIMER marker “v”.

After the TIMER has been set, proceed with step 3 of the “Off-The-Air Recording Procedure”. At the end of the recording, both the television set and the CARTAVISION® Recorder will be automatically turned off.

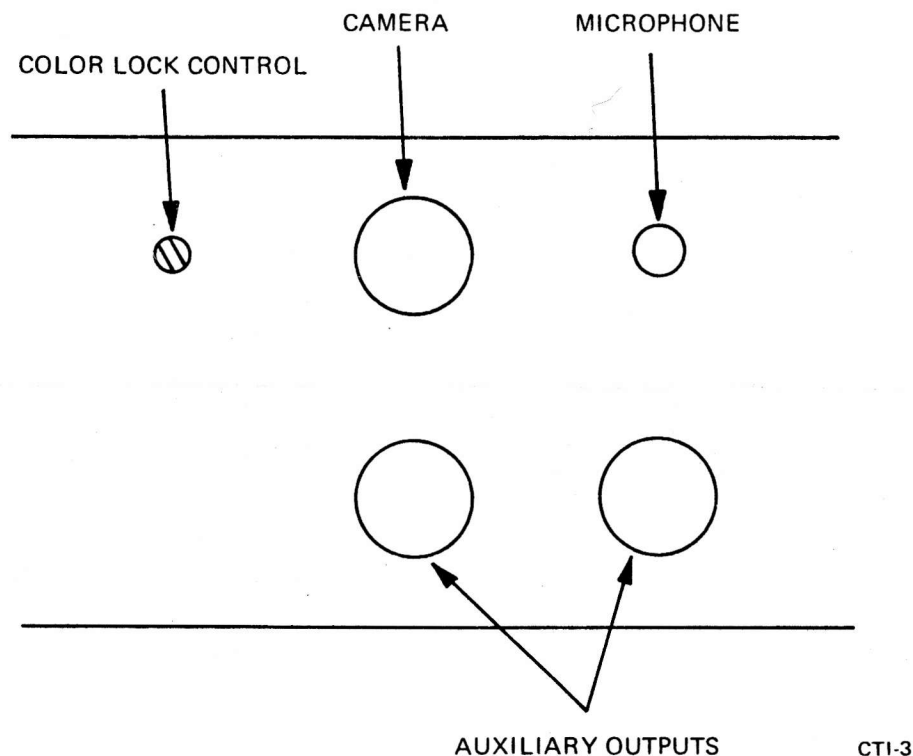


Figure 3.

The TIMER knob has three time increments: five minutes, 15 minutes and one hour, and will allow up to eight hours delay. The accuracy of the timer is plus or minus three minutes.

Permanent Recordings

If desired, any recorded cartridge can be made permanent to prevent anyone from using the cartridge for a new recording.

- Step 1:* Hold the cartridge so that the minute meter is facing up and the tab (Figure 4) is facing down.
- Step 2:* Insert a thin-bladed knife in under the plastic tab, then twist the knife to bend the tab. The tab will break and fall to the floor.

CAUTION

The cartridge must be held so that the removed tab drops down and away from the cartridge. If the tab drops into the cartridge, it may damage the tape, the cartridge or even the recorder.

PLAYBACK

General

The playback of previously recorded tapes is basically a simple procedure: installing the tape cartridge (unless, of course, the recording has been made just before playback), rewinding the tape if necessary, and then turning the function switch to PLAY.

Several controls on the CARTAVISION® Recorder are used only in playback to help obtain a good quality stable picture. These are the TUNE and the FINE TUNE controls, their use will be explained later.

Three types of cartridges are available: the pre-recorded rental cartridge, the pre-recorded purchased cartridge and the blank cartridge. These cartridges come in two sizes and the CARTAVISION® Recorder will play either size without adjustment. The playback procedure is the same for all three types of cartridges; however, the rental cartridge CAN NOT be rewound and both the rental cartridge and the pre-recorded cartridge have been made permanent so they cannot be erased.

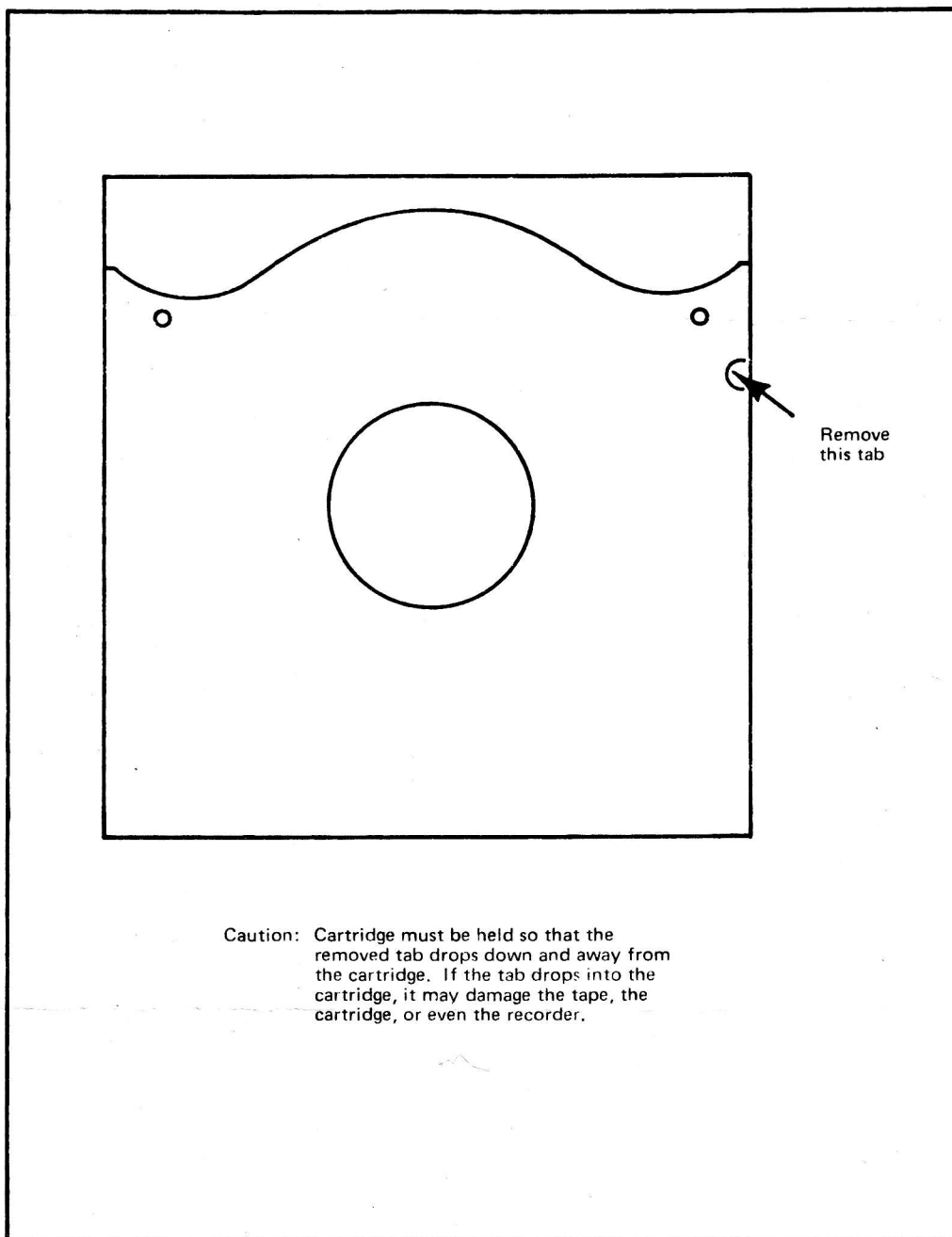
Playback Procedure

To play back a previously recorded cartridge, proceed as follows:

- Step 1:* Load the cartridge into the CARTAVISION® Recorder.
- Step 2:* Apply power to the television set and place the CTV/TV switch (No. 1 in Figure 1) in the CTV position. Check that the TIMER/SLEEP switch (No. 4 in Figure 1) is in the NORMAL position. Rewind the tape, if necessary.
- Step 3:* Turn the function switch (No. 2 in Figure 1) to the PLAY position. The recorder will now be in the play mode. There is a seven-second picture lock period after the function switch is turned to PLAY. During this time, the television screen will be dark.

CAUTION

Do not press the RECORD button; the home recorded tapes will be erased.



Caution: Cartridge must be held so that the removed tab drops down and away from the cartridge. If the tab drops into the cartridge, it may damage the tape, the cartridge, or even the recorder.

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Figure 4.

- Step 4:* Starting from the extreme counter-clockwise position, *slowly* adjust the TUNE control (No. 6 in Figure 1) for the best picture on the television screen. Note that the TUNE control is effective only during playback and may cause hue changes during adjustment.
- Step 5:* Adjust the FINE TUNE control (No. 7 in Figure 1) so that the top of the picture, as viewed on the television screen, is straight and not bent to the left or right. The FINE TUNE control is effective only during playback.

Tuning Controls

The TUNE and FINE TUNE controls are used during playback to match, as closely as possible, the conditions existing when the recording was made.

Because of many possible variations, the controls cannot be permanently adjusted. Some of the variations include: (1) the effects of humidity and temperature; (2) the recording may have been made on a different recorder which may have had slightly different tracking and tension characteristics; and (3) the tape may have become stretched since it was recorded.

The TUNE control effectively adjusts the instantaneous head position relative to the position of the moving video tape. The positioning is controlled through control track pulses that are recorded simultaneously with the video signal. In playback, adjusting the TUNE control varies the relative head position. It is adjusted for the best possible picture without tearing at the top or bottom or any other part of the picture. Figure 5 shows a comparison between a normal picture (A) and a distorted picture caused by improper tracking (B).

The FINE TUNE control varies the take-up pull on the tape from the take-up reel in the tape cartridge. It consequently results in varying tape stretch. This effect is especially noted at the top of the picture and should be adjusted for the straightest vertical lines (or least look) at the top of the picture. Figure 5(c) illustrates the distortion caused by improper tensioning.

Special Prerecorded Tapes

There are two audio channels on every prerecorded tape. The CARTAVISION® Recorder is internally connected so that the sound of both audio channels are combined to provide monaural operation with stereo or monaural tapes.

Certain tape cartridges will have bilingual or stereo audio channels. In playing a bilingual tape, the selection of one or the other language is made by disconnecting the undesired channel through the insertion of a plastic plug into one or the other of the auxiliary audio outputs at the back of the CARTAVISION® Recorder. This will leave the desired channel connected to the speaker of the television set.

For television sets not equipped for stereo operation, connect the left input of a stereo amplifier to the left auxiliary output of the CARTAVISION® Recorder. Connect the right input of the stereo amplifier to the right auxiliary output. The television set's loudspeaker is now disconnected. Bilingual tape cartridges may also be played when connected in this manner by selecting one or the other of the channels at the stereo amplifier.

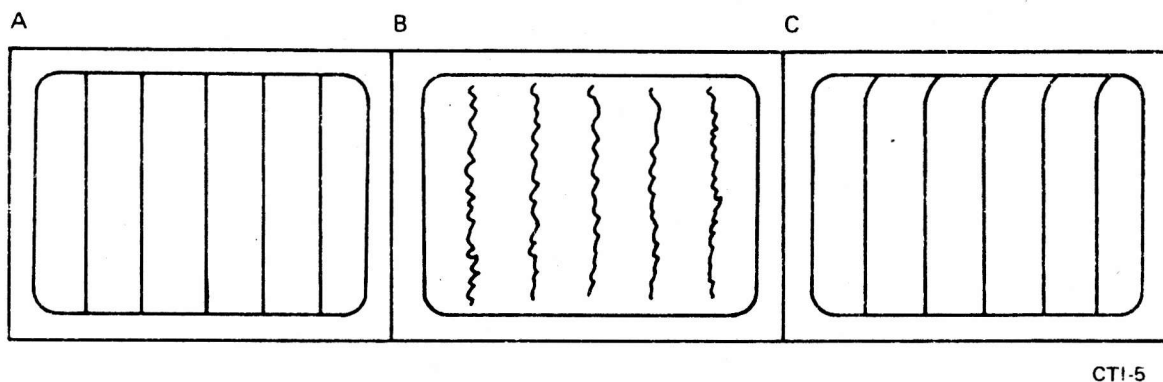


Figure 5.

ADDITIONAL TECHNIQUES

Recording Hints

Recordings, particularly live recordings, should be made continuously. If sequences are recorded separately, disturbances in the picture lasting seven or eight seconds will occur between segments.

Both old and new tape cartridges should be unwound in fast-forward and then rewound in fast-rewind in one continuous run to insure proper tape packing. A poor tape pack can cause momentary shifts in tape positioning at the video heads resulting in possible temporary loss of picture information.

NOTE

This paragraph does not apply to rental cartridges, since these cartridges can not be rewound.

Cartridge Removal

To remove the tape cartridge, stop the tape as defined under "Stopping Tape Motion" and allow at least three seconds for the tape in the cartridge to stop moving and for the tape arms to retract. A protective mechanical lock prevents the cartridge holder from being opened while the tape is still moving. After the tape has stopped proceed as follows:

- Step 1: Open the cartridge holder.
- Step 2: Pull the cartridge out.
- Step 3: If desired, insert a new cartridge.
- Step 4: Close the cartridge holder.

Sleep Mode

The CARTRIVISION® Recorder and the television set can be made to automatically turn themselves off after playing back a tape cartridge. To do this, follow the "Playback Procedure" until the picture is on the television screen, then place the TIMER/SLEEP switch (No. 4 in Figure 1) in the TIMER/SLEEP position.

Closed Circuit Camera Operation

The Cartrivision Instant Replay Camera and microphone along with the television set, can be used to monitor any desired location. To perform this function, proceed as follows:

- Step 1:* Apply power to the television set and place the CTV/TV switch (No. 1 in Figure 1) in the CTV position. Check that the TIMER/SLEEP switch (No. 4 in Figure 1) is in the NORMAL position.
- Step 2:* Connect the cables from the Cartrivision Camera and the microphone to the appropriate receptacles at the rear of the Cartrivision Recorder.
- Step 3:* Place the camera switch (No. 3 in Figure 1) in the CCTV position. The picture from the camera and sound from the microphone will now be seen and heard at the television set.

NOTE

The camera indicator switch and light do not function during this mode of operation.

Care of Tape Cartridges

The problem of dirt and moisture on the tape (moisture attracts dirt) can occur both during use and while the cartridge is being stored. For this reason the tape should be stored in an enclosed relatively dust free area that does not have wide variations in temperature. When recording, conditions permitting, the area should be relatively dust free. Electromagnetic fields generated by home appliances may affect the fidelity of the signal on the tape; therefore, the cartridge should be stored away from operating electrical appliances.